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Frank A. DeNap

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EXAMINER

CHAU, COREY P

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/893,136	<b>Applicant(s)</b> DENAP ET AL.	
	<b>Examiner</b> Corey P. Chau	<b>Art Unit</b> 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22-35 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 30-34, 40 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-20, 22-29, 35, 37-39, and 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18-20, 22-24, 29, 35, 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 20010034253 to Ruschin in view of U.S. Patent No. 5812295 to Kitasagami.

3. Regarding Claim 18, Ruschin discloses an electro-optical headset (Fig. 1) comprising: an electro-optical interface (14) for receiving a first electrical signal representative of first audio and for producing a first modulated light signal based on the first electrical signal, and for receiving a second modulated light signal and demodulating the second modulated light signal to produce a second electrical signal representative of second audio (Fig. 1); an optical link (30) having a first end and a second end, the first end being coupled to the electro-optical interface for receiving the first modulated light signal and for transmitting the second modulated light signal (Fig. 1); an optical receiver (22) coupled to the second end of the optical link for receiving the first modulated light signal, and for demodulating the first modulated light signal to produce a third electrical signal representative of the first audio (Fig. 1); a headset speaker element (24) electrically connected with the optical receiver for receiving the third electrical signal and producing first sound waves based on the third electrical

Art Unit: 2644

signal; and a microphone element (26) coupled to the second end of the optical link for receiving the first modulated light signal and for transmitting the second modulated light signal, and for modulating the first modulated light signal to produce the second modulated light signal representative of the second audio (Fig. 1; page 3, paragraphs 0040 and 0041);

wherein the microphone element comprises: an electrical microphone (26) for receiving second sound waves representative of the second audio and for producing a fourth electrical signal based on the second sound waves (Fig. 1).

Ruschin does not expressly disclose an electro-optical shutter electrically connected to the electrical microphone for receiving the first modulated light signal and modulating the first modulated light signal to produce the second modulated light signal, wherein the second modulated light signal is representative of the fourth electrical signal. Terui discloses that a LED or a laser emitting diode using light or an infrared ray, or an optical shutter using an LCD may be used as a transmission enable signal output means, and an element such as a PIN diode or a phototransistor for converting light into an electrical signal may be used as a transmission enable signal reception means.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Ruschin with the teaching of Terui to utilize any known methods of producing a light signal, such as an optical shutter using an LCD may be used. Therefore, Ruschin as modified discloses an electro-optical shutter electrically connected to the electrical microphone for receiving the first modulated light signal and modulating the first modulated light signal to produce the second modulated

Art Unit: 2644

light signal, wherein the second modulated light signal is representative of the fourth electrical signal.

Ruschin as modified discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a directional optical coupler for receiving the first modulated light signal from the second end of the optical link and directing the first modulated light signal to the electro-optical shutter, and for receiving the second modulated light signal from the electro-optical shutter and directing the second modulated light signal to the second end of the optical link. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to utilize a directional optical coupler in place of the optical couplers (i.e. a directional optical coupler for receiving the first modulated light signal from the second end of the optical link and directing the first modulated light signal to the electro-optical shutter, and for receiving the second modulated light signal from the electro-optical shutter and directing the second modulated light signal to the second end of the optical link).

4. Regarding Claim 19, Ruschin as modified discloses at least one electrical audio connector coupled with the electro-optical interface for receiving the first electrical signal from electronic equipment and for transmitting the second electrical signal to the electronic equipment (Fig. 1; page 3, paragraph 0035).

Art Unit: 2644

5. Regarding Claim 20, Ruschin as modified does not expressly disclose the optical receiver is a photo-voltaic cell. However, the Examiner takes Official Notice that it is well known in the art that any known type of photo-detector can be utilized, such as a photo-voltaic cell in order to generate an electrical signal from the light source. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ruschin as modified to utilize any known type of photo-detector, such as a photo-voltaic cell in order to generate an electrical signal from the light source.

6. All elements of claim 22 are comprehended by Claim 18. Claim 22 is rejected for the reasons stated above apropos to Claim 18.

7. Regarding Claim 23, Ruschin as modified discloses a microphone 26, but does not expressly disclose the electrical microphone is a piezoelectric microphone. However, the Examiner takes Official Notice that it is well known in the art to utilize any well known types of microphone in the art such as a piezoelectric microphone to receive sound. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified to utilize any well known types of microphone in the art such as a piezoelectric microphone to receive sound.

8. Regarding Claim 24, Ruschin as modified discloses the first modulated light signal is generated by a laser light emitting diode (Figs. 2 and 3).

9. Regarding Claim 29, Ruschin as modified discloses the electro-optical interface comprises a semiconductor device for receiving the second modulated light signal, and

wherein the semiconductor device is selected from the group consisting of a photodiode and a phototransistor (Figs. 1-3).

10. Regarding Claim 35, Ruschin as modified discloses a system comprising: a mobile station (Fig. 1); an electro-optical interface (14) for receiving a first electrical signal from the mobile station representative of first audio, and for producing a first modulated light signal based on the first electrical signal, and for receiving a second modulated light signal and demodulating the second modulated light signal to produce a second electrical signal for transmission to the mobile station representative of second audio (Fig. 1); an optical link (30) having a first end and a second end, the first end being coupled to the electro-optical interface for receiving the first modulated light signal and for transmitting the second modulated light signal; an optical receiver (22) coupled to the second end of the optical link for receiving the first modulated light signal, and for demodulating the first modulated light signal to produce a third electrical signal representative of the first audio; a headset speaker element (24) electrically connected with the optical receiver for receiving the third electrical signal and producing first sound waves based on the third electrical signal (Fig. 1); and a microphone element (26) coupled to the second end of the optical link for receiving the first modulated light signal and for transmitting the second modulated light signal, and for modulating the first modulated light signal to produce the second modulated light signal representative of the second audio (Fig. 1; page 3, paragraphs 0040 and 0041);

wherein the microphone element comprises: an electrical microphone (26) for receiving second sound waves representative of the second audio and for producing a fourth electrical signal based on the second sound waves (Fig. 1).

Ruschin does not expressly disclose an electro-optical shutter electrically connected to the electrical microphone for receiving the first modulated light signal and modulating the first modulated light signal to produce the second modulated light signal, wherein the second modulated light signal is representative of the fourth electrical signal. Terui discloses that a LED or a laser emitting diode using light or an infrared ray, or an optical shutter using an LCD may be used as a transmission enable signal output means, and an element such as a PIN diode or a phototransistor for converting light into an electrical signal may be used as a transmission enable signal reception means. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Ruschin with the teaching of Terui to utilize any known methods of receiving and transmitting a light signal, such as an optical shutter using an LCD may be used. Therefore, Ruschin as modified discloses an electro-optical shutter electrically connected to the electrical microphone for receiving the first modulated light signal and modulating the first modulated light signal to produce the second modulated light signal, wherein the second modulated light signal is representative of the fourth electrical signal.

Ruschin as modified discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a directional optical coupler for receiving the first modulated light



Art Unit: 2644

signal from the second end of the optical link and directing the first modulated light signal to the electro-optical shutter, and for receiving the second modulated light signal from the electro-optical shutter and directing the second modulated light signal to the second end of the optical link. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to utilize a directional optical coupler in place of the optical couplers (i.e. a directional optical coupler for receiving the first modulated light signal from the second end of the optical link and directing the first modulated light signal to the electro-optical shutter, and for receiving the second modulated light signal from the electro-optical shutter and directing the second modulated light signal to the second end of the optical link).

11. Claim 37 is essentially similar to Claim 22 and is rejected for the reasons stated above apropos to Claim 22.

12. Claim 38 is essentially similar to Claim 23 and is rejected for the reasons stated above apropos to Claim 23.

13. Claim 39 is essentially similar to Claim 24 and is rejected for the reasons stated above apropos to Claim 24.

14. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 20010034253 to Ruschin in view of U.S. Patent No. 5812295 to Kitasagami.

15. Regarding Claim 25, Ruschin discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a directional optical coupler for receiving the first modulated light signal from the second end of the optical link and directing the first modulated light signal to the optical receiver and the microphone element, and for receiving the second modulated light signal from the microphone element and directing the second modulated light signal to the second end of the optical link. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to utilize a directional optical coupler in place of the optical couplers (a directional optical coupler for receiving the first modulated light signal from the second end of the optical link and directing the first modulated light signal to the optical receiver and the microphone element, and for receiving the second modulated light signal from the microphone element and directing the second modulated light signal to the second end of the optical link).

16. Regarding Claim 26, Ruschin as modified does not expressly disclose an optical splitter for receiving the first modulated light signal from the directional optical coupler

and directing the first modulated light signal to the optical receiver along a first optical path and directing the first modulated light signal to the microphone element along a second optical path. However, the Examiner takes Official Notice that it would have been obvious to one having ordinary skill in the art to utilize a optical splitter in order to direct the first modulated light signal to the optical receiver along a first optical path and direct the first modulated light signal to the microphone element along a second optical path. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ruschin as modified to utilize a optical splitter in order to direct the first modulated light signal to the optical receiver along a first optical path and direct the first modulated light signal to the microphone element along a second optical path.

17. Regarding Claim 27, Ruschin discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a directional optical coupler for receiving the first modulated light signal from the electro-optical interface and directing the first modulated light signal to the first end of the optical link, and for receiving the second modulated light signal from the first end of the optical link and directing the second modulated light signal to the electro-optical interface. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to

Art Unit: 2644

utilize a directional optical coupler in place of the optical couplers (a directional optical coupler for receiving the first modulated light signal from the electro-optical interface and directing the first modulated light signal to the first end of the optical link, and for receiving the second modulated light signal from the first end of the optical link and directing the second modulated light signal to the electro-optical interface).

18. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 20010034253 to Ruschin in view of U.S. Patent No. 6154301 to Harvey.

19. Regarding Claim 28, Ruschin discloses the electro-optical interface comprises: an optical modulator (18) configured for receiving an audio-out signal from cellular communication unit and generating a corresponding first optical signal, but does not expressly disclose a pulse width modulation circuit for receiving the first electrical signal and producing the first modulated light signal, wherein the first modulated light signal is pulse width modulated based on the first electrical signal. However, the Examiner takes Official Notice that any well known techniques of modulation such as pulse width modulation can be used in order to receive the first electrical signal and producing the first modulated light signal. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin to utilize any well known techniques of modulation such as pulse width modulation in order to receive the first electrical signal and producing the first modulated light signal.

Ruschin as modified discloses the electro-optical interface comprises: an optical receiver responsive to a received optical signal to generate a corresponding electrical audio-in signal to be provide to the electrical input of cellular communication unit, but does not expressly disclose a sample-and-hold circuit for receiving the second modulated light signal and producing the second electrical signal, wherein the second modulated light signal is amplitude modulated based on the second audio. However it would have been obvious to one having ordinary skill in the art to utilize any well known methods of receiving a modulated light signal and producing an electrical signal, such as that of Harvey. Harvey discloses an optical receiver comprising a photodetector and a sampling circuit 43, wherein the sampling circuit is gated by a binary output signal from a trigger circuit so as to sample an amplitude of the analog signal during those intervals when light is being received (i.e. a sample-and-hold circuit for receiving the second modulated light signal and producing the second electrical signal, wherein the second modulated light signal is amplitude modulated based on the second audio)(column 2, lines 49-65). Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin with the teaching of Harvey to utilize an optical receiver comprising a photodetector and a sampling circuit 43, wherein the sampling circuit is gated by a binary output signal from a trigger circuit so as to sample an amplitude of the analog signal during those intervals when light is being received.

20. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 20010034253 to Ruschin in view of U.S. Patent No.

6055500 to Terui, U.S. Patent No. 5812295 to Kitasagami, and U.S. Patent No. 6154301 to Harvey.

21. Regarding Claim 42, Ruschin discloses an electro-optical headset (Fig. 1) comprising: an optical modulator (18) configured for receiving an audio-out signal from cellular communication unit and generating a corresponding first optical signal, but does not expressly disclose a pulse width modulation circuit for receiving a first electrical signal representative of first audio and producing a first modulated light signal from a laser light emitting diode, wherein the first modulated light signal is pulse width modulated based on the first electrical signal. However, the Examiner takes Official Notice that any well known techniques of modulation such as pulse width modulation can be used in order to receive the first electrical signal and producing the first modulated light signal. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin to utilize any well known techniques of modulation such as pulse width modulation in order to receive the first electrical signal and producing the first modulated light signal.

Ruschin as modified discloses an electro-optical headset (Fig. 1) comprising: an optical receiver responsive to a received optical signal to generate a corresponding electrical audio-in signal to be provide to the electrical input of cellular communication unit, but does not expressly disclose a sample-and-hold circuit for receiving a second modulated light signal in a photo-detector and producing a second electrical signal representative of second audio, wherein the second modulated light signal is amplitude modulated based on the second audio. However it would have been obvious to one

Art Unit: 2644

having ordinary skill in the art to utilize any well known methods of receiving a modulated light signal and producing an electrical signal, such as that of Harvey.

Harvey discloses an optical receiver comprising a photodetector and a sampling circuit 43, wherein the sampling circuit is gated by a binary output signal from a trigger circuit so as to sample an amplitude of the analog signal during those intervals when light is being received (i.e. a sample-and-hold circuit for receiving a second modulated light signal in a photo-detector and producing a second electrical signal representative of second audio, wherein the second modulated light signal is amplitude modulated based on the second audio)(column 2, lines 49-65). Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin with the teaching of Harvey to utilize an optical receiver comprising a photodetector and a sampling circuit 43, wherein the sampling circuit is gated by a binary output signal from a trigger circuit so as to sample an amplitude of the analog signal during those intervals when light is being received.

Ruschin as modified discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a first directional optical coupler for receiving the first modulated light signal from the pulse width modulation circuit and directing the first modulated light signal to the first end of the optical link, and for receiving the second modulated light signal from the first end of the optical link and directing the second modulated light signal to the photo-detector in the sample-and-hold circuit. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can

Art Unit: 2644

substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to utilize a directional optical coupler in place of the optical couplers (a first directional optical coupler for receiving the first modulated light signal from the pulse width modulation circuit and directing the first modulated light signal to the first end of the optical link, and for receiving the second modulated light signal from the first end of the optical link and directing the second modulated light signal to the photo-detector in the sample-and-hold circuit).

Ruschin as modified discloses an optical link (30) having a first end and a second end, the first end being coupled to first directional optical coupler for receiving the first modulated light signal and for transmitting the second modulated light signal (Fig. 1).

Ruschin as modified discloses optical couplers at each end of the signal fiber, as will be clear to one ordinarily skilled in the art (page 3, paragraph 0041), but does not expressly disclose a second directional optical coupler coupled to the second end of the optical link for receiving the first modulated light signal from the second end of the optical link and for transmitting the second modulated light signal to the second end of the optical link. However it would have been obvious to one having ordinary skill in the art that a directional optical coupler can substitute for the optical coupler, as taught by Kitasagami. Kitasagami disclose a directional optical coupler can substitute for the optical coupler. Therefore it would have been obvious to one having ordinary skill in the art to modify Ruschin as modified with the teaching of Kitasagami to utilize a directional



Art Unit: 2644

optical coupler in place of the optical couplers (a second directional optical coupler coupled to the second end of the optical link for receiving the first modulated light signal from the second end of the optical link and for transmitting the second modulated light signal to the second end of the optical link).

Ruschin as modified does not expressly disclose the optical receiver is a photo-voltaic cell. However, the Examiner takes Official Notice that it is well known in the art that any known type of photo-detector can be utilized, such as a photo-voltaic cell in order to generate an electrical signal from the light source. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ruschin as modified to utilize any known type of photo-detector, such as a photo-voltaic cell in order to generate an electrical signal from the light source.

Ruschin as modified discloses a headset speaker (24) element electrically connected with the photo-voltaic cell for receiving the third electrical signal and producing first sound waves based on the third electrical signal.

Ruschin as modified does not expressly discloses an optical splitter for receiving the first modulated light signal from the second directional optical coupler and directing the first modulated light signal to the photo-voltaic cell along a first optical path.

However, the Examiner takes Official Notice that it would have been obvious to one having ordinary skill in the art to utilize a optical splitter in order to direct the first modulated light signal to the optical receiver along a first optical path and direct the first modulated light signal to the microphone element along a second optical path.

Therefore it would have been obvious to one having ordinary skill in the art at the time

Art Unit: 2644

the invention was made to modify Ruschin as modified to utilize a optical splitter in order to direct the first modulated light signal to the optical receiver along a first optical path and direct the first modulated light signal to the microphone element along a second optical path.

Ruschin as modified discloses an electrical microphone (26) for receiving second sound waves representative of the second audio and for producing a fourth electrical signal based on the second sound waves representative of the second audio.

Ruschin as modified does not expressly discloses a liquid crystal display element electrically connected to the electrical microphone for receiving the first modulated light signal along a second optical path from the optical splitter and modulating the first modulated light signal to produce the second modulated light signal, wherein the second modulated light signal is representative of the fourth electrical signal, and wherein the second modulated light signal traverses a third optical path and is received by the second directional optical coupler for transmission to the second end of the optical link. Terui discloses that a LED or a laser emitting diode using light or an infrared ray, or an optical shutter using an LCD may be used as a transmission enable signal output means, and an element such as a PIN diode or a phototransistor for converting light into an electrical signal may be used as a transmission enable signal reception means. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Ruschin with the teaching of Terui to utilize any known methods of producing a light signal, such as an optical shutter using an LCD may be used. Therefore, Ruschin as modified discloses a liquid crystal display

element electrically connected to the electrical microphone for receiving the first modulated light signal along a second optical path from the optical splitter and modulating the first modulated light signal to produce the second modulated light signal, wherein the second modulated light signal is representative of the fourth electrical signal, and wherein the second modulated light signal traverses a third optical path and is received by the second directional optical coupler for transmission to the second end of the optical link.

### ***Response to Arguments***

22. Applicant's arguments filed 8/25/2005 have been fully considered but they are not persuasive.

23. With respect to Applicant's argument on page 21, stating that "the Applicant respectfully submit that Terui, like Ruschin, also fails to disclose, teach, or suggest using an electro-optical shutter or liquid crystal display ("LCD) that modulates a light signal to produce a second modulated light signal that is representative of an electrical signal based on sound waves", has been noted. However, the Examiner respectfully disagrees. The invention of Ruschin is intended to transmit a signal representative of a sound received from the microphone to electro-optic interface unit, therefore Ruschin as modified (Ruschin in view of Terui) uses the optical shutter, in place of the LED or diode laser to produce a signal representative of a sound from the microphone and to transmit a signal to the electro-optic interface unit, not to use the optical shutter as a transmission enable signal output because the invention of Ruschin is not intended to

Art Unit: 2644

transmit a transmission enable signal output; it is intended to transmit a signal representative of a sound received from the microphone.

24. In response to applicant's argument that "Terui does not state, in the cited portion or else where, that an "optical shutter using an LCD" can be used as a "voice information reception" or "voice information transfer" means" and "Thus, Applicant submit that Terui fails to disclose, teach, or suggest the claimed elements directed to using an optical shutter or LCD that modulates a light signal to produce a second modulated light signal based on a sound waves", the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In addition, see above argument.

### ***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2644


mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P. Chau whose telephone number is (571)272-7514. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 23, 2005  
CPC

  
VIVIAN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

11/28/05